Automotive AC Technician

QP Code: ASC/Q1416

Version: 2.0

NSQF Level: 4

Automotive Skills Development Council || 153, Gr Floor, Okhla Industrial Area, Phase – III, Leela Building
New Delhi – 110020

Contents

ASC/Q1416: Automotive AC Technician

Brief Job Description

A Automotive AC technician performs the process of installing, service and repair of AC system in vehicles.

Personal Attributes

An individual in this job must have good communication and interpersonal skills. The person should be organised, team-oriented, customer centric, able to multi-task, and have the ability to work for long hours in adverse conditions. The individual should be a keen observer and have an eye for detail and quality.

Applicable National Occupational Standards (NOS)

Compulsory NOS:

1. ASC/N9801: Organize work and resources (Service)
2. ASC/N9802: Interact effectively with colleagues, customers and others
3. ASC/N1425: Install an automobile AC system
4. ASC/N1426: Perform service and routine maintenance of the AC system

Qualification Pack (QP) Parameters

Sector	Automotive
Sub-Sector	Automotive Vehicle Service
Occupation	Technical Service and Repair
Country	India
NSQF Level	4
Aligned to NCO/ISCO/ISIC Code	NCO-2015/7231.0102
Minimum Educational Qualification & Experience	8th Class + 1 year ITI with 2 years of experience in Automotive Sector OR 8th Class + 2 year ITI with 1 year of experience in Automotive Sector OR 10th Class with 1 Year of experience OR Certificate-NSQF (Four Wheeler Service

	Assistant/ Two Wheeler Service Assistant Level 3) with 2 Years of experience in Automotive Service
Minimum Level of Education for Training in School	10th Class
Pre-Requisite License or Training	LMV Driving License
Minimum Job Entry Age	18 Years
Last Reviewed On	29/07/2021
Next Review Date	29/07/2026
NSQC Approval Date	29/07/2021
Version	2.0

ASC/N9801: Organize work and resources (Service)

Description

This NOS unit is about implementing safety, planning work, adopting sustainable practices for optimising use of resources

Scope

The scope covers the following :

- Maintain safe and secure working environment
- Perform work as per quality standards
- Health and hygiene
- Material/energy conservation practices
- Effective waste management practices

Elements and Performance Criteria

Maintain safe and secure working environment

To be competent, the user/individual on the job must be able to:

PC1. organise work as per organisation's current health, safety and security policies and procedures

PC2. report any identified breaches in health, safety, and security policies and procedures to the designated person

PC3. identify the risks and hazards associated with work activities, their causes and prevention

Perform work as per quality standards

To be competent, the user/individual on the job must be able to:

PC4. ensure work area is clean and tidy

PC5. ensure that work is accomplished as per the requirements within the specified timeline

PC6. ensure team goals are given preference over individual goals

Health and hygiene

To be competent, the user/individual on the job must be able to:

PC7. sanitize workstation and equipment regularly

PC8. clean hands with soap, alcohol-based sanitizer regularly

PC9. avoid contact with ill people and self-isolate in a similar situation

PC10. wear and dispose PPEs regularly and appropriately

PC11. report advanced hygiene and sanitation issues to appropriate authority

PC12. follow stress and anxiety management techniques

Material/energy conservation practices

To be competent, the user/individual on the job must be able to:

PC13. identify ways to optimise usage of material in various tasks/activities/processes

PC14. use resources, including water, in a responsible manner

PC15. check for spills/leakages in various tasks/activities/processes

PC16. plug spills/leakages and escalate to appropriate authority if unable to rectify

PC17. carry out routine cleaning of tools, machines and equipment

PC18. check if the equipment/machine is functioning normally before commencing work and rectify wherever required

PC19. report malfunctioning (fumes/sparks/emission/vibration/noise) and lapse in maintenance of equipment

PC20. ensure electrical equipment and appliances are properly connected and turned off when not in use

Effective waste management practices

To be competent, the user/individual on the job must be able to:

PC21. identify recyclable and non-recyclable, and hazardous waste generated

PC22. segregate waste into different categories

PC23. dispose non-recyclable waste appropriately

PC24. deposit recyclable and reusable material at identified location

PC25. follow processes specified for disposal of hazardous waste

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. organisation procedures for health, safety and security, and individual role and responsibilities in this context

KU2. the organisations emergency procedures for different emergency situations and the importance of following the same

KU3. evacuation procedures for workers and visitors

KU4. how and when to report hazards as well as the limits of responsibility for dealing with hazards

KU5. potential hazards, risks and threats based on the nature of work

KU6. the implications of own work on the schedule and work of others

KU7. efficient utilisation of material and water

KU8. basics of electricity and prevalent energy efficient devices

KU9. ways to recognise common electrical problems

KU10. common practices of conserving electricity

KU11. common sources of pollution and ways to minimize it

KU12. categorisation of waste into dry, wet, recyclable, non-recyclable and items of single-use plastics

KU13. usage of different colours of dustbins

KU14. waste management and methods of waste disposal

KU15. significance of greening

KU16. organisation's policies to maintain personal health and hygiene at workplace

Generic Skills (GS)

User/individual on the job needs to know how to:

GS1. read instructions/guidelines/standard operating procedures
GS2. complete statutory documents relevant to safety and hygiene
GS3. modify work practices to improve them
GS4. ask for clarifications from superior about the job requirement
GS5. work with supervisors/team members to carry out work related tasks
GS6. complete tasks efficiently and accurately within stipulated time
GS7. inform/report to concerned person in case of any problem
GS8. make timely decisions for efficient utilization of resources
GS9. write in at least one language and complete written work with attention to detail
GS10. record data on waste disposal at workplace
GS11. be punctual, utilize time and manage workload efficiently
GS12. evaluate strategies to maintain, enhance or reduce the intensity of heightened emotional response

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Maintain safe and secure working environment	8	4	-	3
PC1. organise work as per organisation's current health, safety and security policies and procedures	-	2	-	1
PC2. report any identified breaches in health, safety, and security policies and procedures to the designated person	3	1	-	-
PC3. identify the risks and hazards associated with work activities, their causes and prevention	5	1	-	2
Perform work as per quality standards	12	8	-	6
PC4. ensure work area is clean and tidy	4	2	-	-
PC5. ensure that work is accomplished as per the requirements within the specified timeline	6	4	-	2
PC6. ensure team goals are given preference over individual goals	2	2	-	4
Health and hygiene	12	8	-	5
PC7. sanitize workstation and equipment regularly	2	2	-	2
PC8. clean hands with soap, alcohol-based sanitizer regularly	2	1	-	-
PC9. avoid contact with ill people and self-isolate in a similar situation	2	1	-	-
PC10. wear and dispose PPEs regularly and appropriately	2	2	-	1
PC11. report advanced hygiene and sanitation issues to appropriate authority	2	2	-	2
PC12. follow stress and anxiety management techniques	2	-	-	-
Material/energy conservation practices	10	4	-	3
PC13. identify ways to optimise usage of material in various tasks/activities/processes	2	-	-	1

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC14. use resources, including water, in a responsible manner	2	-	-	-
PC15. check for spills/leakages in various tasks/activities/processes	-	1	-	-
PC16. plug spills/leakages and escalate to appropriate authority if unable to rectify	-	1	-	1
PC17. carry out routine cleaning of tools, machines and equipment	2	-	-	-
PC18. check if the equipment/machine is functioning normally before commencing work and rectify wherever required	-	1	-	1
PC19. report malfunctioning (fumes/sparks/emission/vibration/noise) and lapse in maintenance of equipment	2	1	-	-
PC20. ensure electrical equipment and appliances are properly connected and turned off when not in use	2	-	-	-
Effective waste management practices	**8**	**6**	**-**	**3**
PC21. identify recyclable and non-recyclable, and hazardous waste generated	2	-	-	1
PC22. segregate waste into different categories	-	2	-	-
PC23. dispose non-recyclable waste appropriately	2	2	-	1
PC24. deposit recyclable and reusable material at identified location	2	1	-	-
PC25. follow processes specified for disposal of hazardous waste	2	1	-	1
NOS Total	**50**	**30**	**-**	**20**

National Occupational Standards (NOS) Parameters

NOS Code	ASC/N9801
NOS Name	Organize work and resources (Service)
Sector	Automotive
Sub-Sector	Generic
Occupation	Generic
NSQF Level	3
Credits	TBD
Version	1.0
Last Reviewed Date	29/07/2021
Next Review Date	29/07/2026
NSQC Clearance Date	29/07/2021

ASC/N9802: Interact effectively with colleagues, customers and others

Description

This NOS unit is about communicating with customers and colleagues/superiors, either in own work group or in other work groups within organisation.

Scope

The scope covers the following :

- Communicate effectively with colleagues, customers and others
- Interact with supervisor or superior

Elements and Performance Criteria

Communicate effectively with colleagues, customers and others

To be competent, the user/individual on the job must be able to:

PC1. maintain clear communication with colleagues, customers and others, wherever needed, through all means i.e. face-to-face, telephonic or written

PC2. adjust communication styles to reflect gender and persons with disability (PwD) sensitivity

PC3. work in a way that shows respect for colleagues and others

PC4. follow the organisation's policies and procedures while working in a team

PC5. respect personal space of colleagues and customers

Interact with supervisor or superior

To be competent, the user/individual on the job must be able to:

PC6. identify work requirements by receiving instructions from reporting supervisor

PC7. escalate problems to supervisors that cannot be handled including repairs and maintenance of machine

PC8. report the completed work

PC9. rectify errors as per feedback

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. the importance of effective communication and establishing good working relationships with colleagues and supervisor

KU2. different methods of communication as per the circumstances

KU3. gender based concepts, issues and legislation

Generic Skills (GS)

User/individual on the job needs to know how to:

GS1. read instructions/guidelines/procedures

GS2. listen effectively and orally communicate information
GS3. ask for clarification and advice from the concerned person
GS4. maintain positive and effective relationships with colleagues and customers
GS5. evaluate the possible solution(s) to the problem
GS6. deliver consistent and reliable service to customers
GS7. complete written work with attention to detail
GS8. check that the work meets customer requirements

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Communicate effectively with colleagues, customers and others	36	11	-	14
PC1. maintain clear communication with colleagues, customers and others, wherever needed, through all means i.e. face-to-face, telephonic or written	8	-	-	4
PC2. adjust communication styles to reflect gender and persons with disability (PwD) sensitivity	8	-	-	-
PC3. work in a way that shows respect for colleagues and others	7	4	-	3
PC4. follow the organisation's policies and procedures while working in a team	7	4	-	3
PC5. respect personal space of colleagues and customers	6	3	-	4
Interact with supervisor or superior	14	19	-	6
PC6. identify work requirements by receiving instructions from reporting supervisor	7	4	-	-
PC7. escalate problems to supervisors that cannot be handled including repairs and maintenance of machine	-	5	-	3
PC8. report the completed work	7	5	-	-
PC9. rectify errors as per feedback	-	5	-	3
NOS Total	**50**	**30**	**-**	**20**

National Occupational Standards (NOS) Parameters

NOS Code	ASC/N9802
NOS Name	Interact effectively with colleagues, customers and others
Sector	Automotive
Sub-Sector	Generic
Occupation	Generic
NSQF Level	3
Credits	TBD
Version	1.0
Last Reviewed Date	29/07/2021
Next Review Date	29/07/2026
NSQC Clearance Date	29/07/2021

ASC/N1425: Install an automobile AC system

Description

This NOS unit is about an individual installing the air conditioning system in the vehicles.

Scope

The scope covers the following :

- Prepare for installation of AC system
- Install the appropriate AC system
- Perform post installation activity

Elements and Performance Criteria

Prepare for installation of AC system

To be competent, the user/individual on the job must be able to:

PC1. review the job card and understand work to be carried out to install AC system

PC2. identify the vehicle and AC system manufacturer specifications related to the various brand/model/variant

PC3. collect appropriate tools, equipment, fittings or materials as required for AC system installation and check their condition/calibration

PC4. report the malfunctions if any, in the tools/equipment/material to the person concerned for rectification

Install the appropriate AC system

To be competent, the user/individual on the job must be able to:

PC5. take precautions to avoid damage to the vehicle and its components

PC6. comply with standard operating procedures for fitment of the AC system in the vehicle as specified by the OEM

PC7. make holes/cuts on various surfaces such as metal sheet, plastic, fabric etc., for fitting AC system components and wiring

PC8. remove dummy plug or covers and clean surrounding areas prior to installing AC system components

PC9. install and fit all AC system component in engine and passenger compartment as specified by OEM

PC10. perform refrigerant and wiring circuit connection as specified by the OEM

PC11. test pipe or tubing joints or connections for leaks, using pressure gauge or soap-and-water solution

PC12. follow SOP to fill unit with specified quantity of refrigerant and PAG oil

Perform post installation activity

To be competent, the user/individual on the job must be able to:

PC13. ensure all AC system components are installed/fitted/functioning properly

PC14. follow standard operating procedure to check the performance of AC system post installation

PC15. ensure completeness of tasks assigned before releasing the vehicle

PC16. return leftover consumable/parts, tools/equipment, and report if any malfunctions are observed, to the person concerned

PC17. dispose off packing wraps/box/covers and other material as per organization's policies

PC18. maintain documentation required on the job regarding the overall process of AC system installation in the vehicle

PC19. follow standard operating procedure to identify, validate faults in retrofit AC system and report to supervisor/service advisor if further inspection is required by another specialist

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. the automotive industry in India, workshop structure and role and responsibilities of different people in the workshop

KU2. Standard Operating Procedures (SOP) for receiving vehicles, opening job card, allocation of work, invoicing, vehicle delivery, handling complaints etc

KU3. different components/aggregates as well as auto component manufacturer's specifications for the same

KU4. the overall functioning of an air conditioning and other associated systems

KU5. various methods to install different types of AC system components such as electrical/electronic, mechanical/plastic/interior/exterior etc.

KU6. interconnection of systems with each other and effect of one system on other system

KU7. fundamental terms, laws and principles of electricity and refrigeration such as ohms law, voltage, current, resistance, power, inductance, electromagnetism, evaporation, freezing, heat dissipation etc.

KU8. various provisions given by OEM in vehicles to install AC system such as markings, cuts, dummy plug, fasteners, fitting switches, connections etc.

KU9. various type of refrigerant and PAG oil used in AC systems

KU10. various electrical and electronic signals such as electrical inputs, outputs, voltage, pulse-width modulation, digital signal etc.

KU11. symbols, units and terms used in wiring diagrams associated with AC system

KU12. various sources of information available for assessing service and repair requirements of the vehicle including diagnostic displays, visual inspections, test drives, vehicle/equipment manufacturer specifications, and tolerance limits of components

KU13. fault finding with visual and functional assessment such as damage, corrosion, wear, refrigeration leakage etc.

KU14. how to clean, test, inspect and evaluate air conditioning components

KU15. AC system performance testing and typical symptoms of common faults and failures

KU16. safety, health and environmental policies and regulations for the work place as well as for automotive trade in general

KU17. SOPs of the organization/ dealership for inspection and diagnosis of faults in a vehicle as prescribed by the OEM/components manufacturer

KU18. SOP recommended by OEM for using tools/equipment related to AC system diagnosis service and repair, such as special service tools, measuring instrument, pressure indicators/gauges, refrigerant recycling/evacuation/fusing machine, refrigerant leak detection equipment, dedicated and computer based diagnostic tools etc.

KU19. documentation required on the job (including job card, worksheets, etc.) regarding the basic details of AC system installation and testing performance

KU20. legal regulations that need to be taken into account for handling refrigerant and hazardous waste

KU21. how to use computers

Generic Skills (GS)

User/individual on the job needs to know how to:

GS1. read and interpret workplace related documentation

GS2. interpret the needs of customers by understanding the key issues

GS3. communicate using terms, names, grades and other nomenclature pertaining to the automotive trade

GS4. analyse and apply the information gathered from observation, experience, reasoning or communication to act efficiently

GS5. identify potential workplace problem and take suitable action

GS6. read various sources of information available for assessing service and repair requirements

GS7. write any work related information

GS8. write in English/regional language

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Prepare for installation of AC system	9	12	-	6
PC1. review the job card and understand work to be carried out to install AC system	-	2	-	-
PC2. identify the vehicle and AC system manufacturer specifications related to the various brand/model/variant	3	4	-	2
PC3. collect appropriate tools, equipment, fittings or materials as required for AC system installation and check their condition/calibration	3	4	-	2
PC4. report the malfunctions if any, in the tools/equipment/material to the person concerned for rectification	3	2	-	2
Install the appropriate AC system	16	28	-	9
PC5. take precautions to avoid damage to the vehicle and its components	2	2	-	1
PC6. comply with standard operating procedures for fitment of the AC system in the vehicle as specified by the OEM	5	5	-	2
PC7. make holes/cuts on various surfaces such as metal sheet, plastic, fabric etc., for fitting AC system components and wiring	2	3	-	1
PC8. remove dummy plug or covers and clean surrounding areas prior to installing AC system components	-	2	-	-
PC9. install and fit all AC system component in engine and passenger compartment as specified by OEM	3	5	-	1
PC10. perform refrigerant and wiring circuit connection as specified by the OEM	2	5	-	2
PC11. test pipe or tubing joints or connections for leaks, using pressure gauge or soap-and-water solution	-	3	-	-
PC12. follow SOP to fill unit with specified quantity of refrigerant and PAG oil	2	3	-	2

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Perform post installation activity	5	10	-	5
PC13. ensure all AC system components are installed/fitted/functioning properly	-	2	-	-
PC14. follow standard operating procedure to check the performance of AC system post installation	-	2	-	-
PC15. ensure completeness of tasks assigned before releasing the vehicle	-	1	-	-
PC16. return leftover consumable/parts, tools/equipment, and report if any malfunctions are observed, to the person concerned	1	1	-	1
PC17. dispose off packing wraps/box/covers and other material as per organization's policies	1	1	-	1
PC18. maintain documentation required on the job regarding the overall process of AC system installation in the vehicle	1	1	-	1
PC19. follow standard operating procedure to identify, validate faults in retrofit AC system and report to supervisor/service advisor if further inspection is required by another specialist	2	2	-	2
NOS Total	**30**	**50**	**-**	**20**

National Occupational Standards (NOS) Parameters

NOS Code	ASC/N1425
NOS Name	Install an automobile AC system
Sector	Automotive
Sub-Sector	Automotive Vehicle Service
Occupation	Technical Service & Repair
NSQF Level	4
Credits	TBD
Version	2.0
Last Reviewed Date	29/07/2021
Next Review Date	29/07/2026
NSQC Clearance Date	29/07/2021

ASC/N1426: Perform service and routine maintenance of the AC system

Description

This NOS unit is about an individual to service and carryout routine maintenance of the air conditioning system of vehicles.

Scope

The scope covers the following :

- Prepare for service and repair of Air conditioning System and components
- Perform service and repair of Air conditioning System and components
- Perform post service/repair activities

Elements and Performance Criteria

Prepare for service and repair of Air conditioning System and components

To be competent, the user/individual on the job must be able to:

PC1. review the job card and understand work to be carried out

PC2. identify the auto components related to the various aggregates in the vehicle

PC3. check the functioning of air conditioning system

PC4. conduct test drive to check vehicle performance and identify/validate the faults related to AC system

PC5. conduct visual inspection of the vehicle to identify defects in AC system such as external damage or leakage, wear and tear etc.

PC6. determine the whether AC system need servicing/detailed diagnosis for poor performance

PC7. park the vehicle on appropriate platform according to nature of job to be performed such as detailed diagnosis, AC system service/performance testing/component replacement, or Refrigerant recovering or refilling

PC8. collect workshop tools/measuring device/equipment required for the job and check their condition/calibration

PC9. report the malfunctions if any, in the tools/equipment to the person concerned for rectification

Perform service and repair of Air conditioning System and components

To be competent, the user/individual on the job must be able to:

PC10. take precautions to avoid damage to the vehicle and its components while working AC system

PC11. use workshop tools/measuring devices/equipment required for the job as per OEM Standard Operating Procedure (SOP)

PC12. diagnose indirect faults in vehicle related to AC system from other vehicle system such as engine cooling system, passenger cabin heater circuit etc.

PC13. recover, refill, flush and evacuate air and moisture AC system refrigerant circuit as per OEM SOP

PC14. remove components of AC system wherever applicable as per OEM SOP

PC15. test refrigerant circuit, wiring circuit and AC system component whenever required

PC16. plug the openings of refrigerant circuit joints and place removed components securely as specified by OEM

PC17. report the malfunctions/repairs in the vehicle beyond own scope to the concerned person

PC18. clean and condition dismantled components, including mechanical and electrical aggregates, prior to assemble as per OEM guidelines

PC19. follow SOP to service, repair and overhaul AC system components as per the job requirement

PC20. maintain the documentation related to inspection, servicing and repair of the vehicle

Perform post service/repair activities

To be competent, the user/individual on the job must be able to:

PC21. check the performance of vehicle/aggregate post repair and report to supervisor/service advisor if further inspection is required by another specialist

PC22. ensure completeness of tasks assigned before releasing the vehicle for the next procedure

PC23. dispose off materials such as waste oil, scrap of failed parts/aggregates, as per organisation policies

PC24. return leftover consumable/parts, tools/equipment to the person concerned and report if any malfunction observed

PC25. perform scheduled checks, calibration and timely repairs for workshop tools, equipment and workstations

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. the automotive industry in India, workshop structure and role and responsibilities of different people in the workshop

KU2. Standard Operating Procedure (SOP) for receiving vehicles, opening job card, allocation of work, invoicing, vehicle delivery, handling complaints etc

KU3. different components/aggregates as well as auto component manufacturer's specifications for the same

KU4. the overall functioning of an air conditioning and other associated systems

KU5. interconnection of systems with each other and effect of one system on other system

KU6. fundamental terms, laws and principles of electricity and refrigeration such as ohms law, voltage, current, resistance, power, inductance, electromagnetism, evaporation, freezing, heat dissipation etc.

KU7. various type of refrigerant and PAG oil used in AC systems

KU8. various electrical and electronic signals such as electrical inputs, outputs, voltage, pulse-width modulation, digital signal etc.

KU9. symbols, units and terms used in wiring diagrams associated with AC system

KU10. various sources of information available for assessing service and repair requirements of the vehicle including diagnostic displays, visual inspections, test drives, vehicle/equipment manufacturer specifications, and tolerance limits of components

KU11. fault finding with visual and functional assessment such as damage, corrosion, wear, refrigeration leakage etc.

KU12. how to clean, test, inspect and evaluate air conditioning components

KU13. AC system performance testing and typical symptoms of common faults and failures

KU14. safety, health and environmental policies and regulations for the work place as well as for automotive trade in general

KU15. SOPs of the organization/ dealership for inspection and diagnosis of faults in a vehicle as prescribed by the OEM/components manufacturer

KU16. SOP recommended by OEM for using tools/equipment related to AC system diagnosis service and repair, such as special service tools, measuring instrument, pressure indicators/gauges, refrigerant recycling/evacuation/fusing machine, refrigerant leak detection equipment, dedicated and computer based diagnostic tools etc.

KU17. legal regulations that need to be taken into account for handling refrigerant and hazardous waste

Generic Skills (GS)

User/individual on the job needs to know how to:

GS1. read and interpret workplace related documentation

GS2. interpret the needs of customers by understanding the key issues

GS3. communicate using terms, names, grades and other nomenclature pertaining to the automotive trade

GS4. analyse and apply the information gathered from observation, experience, reasoning or communication to act efficiently

GS5. identify potential workplace problem and take suitable action

GS6. read various sources of information available for assessing service and repair requirements

GS7. write any work related information

GS8. write in English/regional language

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Prepare for service and repair of Air conditioning System and components	10	15	-	6
PC1. review the job card and understand work to be carried out	-	1	-	-
PC2. identify the auto components related to the various aggregates in the vehicle	2	1	-	1
PC3. check the functioning of air conditioning system	2	1	-	1
PC4. conduct test drive to check vehicle performance and identify/validate the faults related to AC system	-	2	-	-
PC5. conduct visual inspection of the vehicle to identify defects in AC system such as external damage or leakage, wear and tear etc.	2	2	-	2
PC6. determine the whether AC system need servicing/detailed diagnosis for poor performance	2	1	-	-
PC7. park the vehicle on appropriate platform according to nature of job to be performed such as detailed diagnosis, AC system service/performance testing/component replacement, or Refrigerant recovering or refilling	-	2	-	-
PC8. collect workshop tools/measuring device/equipment required for the job and check their condition/calibration	2	3	-	1
PC9. report the malfunctions if any, in the tools/equipment to the person concerned for rectification	-	2	-	1
Perform service and repair of Air conditioning System and components	15	25	-	10
PC10. take precautions to avoid damage to the vehicle and its components while working AC system	2	2	-	1
PC11. use workshop tools/measuring devices/equipment required for the job as per OEM Standard Operating Procedure (SOP)	1	2	-	2

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC12. diagnose indirect faults in vehicle related to AC system from other vehicle system such as engine cooling system, passenger cabin heater circuit etc.	2	5	-	2
PC13. recover, refill, flush and evacuate air and moisture AC system refrigerant circuit as per OEM SOP	2	2	-	1
PC14. remove components of AC system wherever applicable as per OEM SOP	2	2	-	-
PC15. test refrigerant circuit, wiring circuit and AC system component whenever required	2	3	-	2
PC16. plug the openings of refrigerant circuit joints and place removed components securely as specified by OEM	1	1	-	-
PC17. report the malfunctions/repairs in the vehicle beyond own scope to the concerned person	-	2	-	-
PC18. clean and condition dismantled components, including mechanical and electrical aggregates, prior to assemble as per OEM guidelines	1	2	-	-
PC19. follow SOP to service, repair and overhaul AC system components as per the job requirement	2	3	-	2
PC20. maintain the documentation related to inspection, servicing and repair of the vehicle	-	1	-	-
Perform post service/repair activities	**5**	**10**	**-**	**4**
PC21. check the performance of vehicle/aggregate post repair and report to supervisor/service advisor if further inspection is required by another specialist	2	3	-	1
PC22. ensure completeness of tasks assigned before releasing the vehicle for the next procedure	-	2	-	-
PC23. dispose off materials such as waste oil, scrap of failed parts/aggregates, as per organisation policies	2	3	-	2
PC24. return leftover consumable/parts, tools/equipment to the person concerned and report if any malfunction observed	1	2	-	1

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC25. perform scheduled checks, calibration and timely repairs for workshop tools, equipment and workstations	-	-	-	-
NOS Total	**30**	**50**	**-**	**20**

National Occupational Standards (NOS) Parameters

NOS Code	ASC/N1426
NOS Name	Perform service and routine maintenance of the AC system
Sector	Automotive
Sub-Sector	Automotive Vehicle Service
Occupation	Technical Service & Repair
NSQF Level	4
Credits	TBD
Version	2.0
Last Reviewed Date	29/07/2021
Next Review Date	29/07/2026
NSQC Clearance Date	29/07/2021

Assessment Guidelines and Assessment Weightage

Assessment Guidelines

1. Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Element/ Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each Element/ PC.

2. The assessment for the theory part will be based on knowledge bank of questions created by the SSC.

3. Assessment will be conducted for all compulsory NOS, and where applicable, on the selected elective/option NOS/set of NOS.

4. Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training center (as per assessment criteria below).

5. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/ training center based on these criteria.

6. To pass the Qualification Pack assessment, every trainee should score the Recommended Pass % aggregate for the QP.

7. In case of unsuccessful completion, the trainee may seek reassessment on the Qualification Pack.

Minimum Aggregate Passing % at QP Level : 70

(**Please note**: Every Trainee should score a minimum aggregate passing percentage as specified above, to successfully clear the Qualification Pack assessment.)

Assessment Weightage

Compulsory NOS

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
ASC/N9801.Organize work and resources (Service)	50	30	-	20	100	15
ASC/N9802.Interact effectively with colleagues, customers and others	50	30	-	20	100	10
ASC/N1425.Install an automobile AC system	30	50	-	20	100	40
ASC/N1426.Perform service and routine maintenance of the AC system	30	50	-	20	100	35
Total	**160**	**160**	**-**	**80**	**400**	**100**

Acronyms

NOS	National Occupational Standard(s)
NSQF	National Skills Qualifications Framework
QP	Qualifications Pack
TVET	Technical and Vocational Education and Training
PwD	Persons with Disability

Glossary

Sector	Sector is a conglomeration of different business operations having similar business and interests. It may also be defined as a distinct subset of the economy whose components share similar characteristics and interests.
Sub-sector	Sub-sector is derived from a further breakdown based on the characteristics and interests of its components.
Occupation	Occupation is a set of job roles, which perform similar/ related set of functions in an industry.
Job role	Job role defines a unique set of functions that together form a unique employment opportunity in an organisation.
Occupational Standards (OS)	OS specify the standards of performance an individual must achieve when carrying out a function in the workplace, together with the Knowledge and Understanding (KU) they need to meet that standard consistently. Occupational Standards are applicable both in the Indian and global contexts.
Performance Criteria (PC)	Performance Criteria (PC) are statements that together specify the standard of performance required when carrying out a task.
National Occupational Standards (NOS)	NOS are occupational standards which apply uniquely in the Indian context.
Qualifications Pack (QP)	QP comprises the set of OS, together with the educational, training and other criteria required to perform a job role. A QP is assigned a unique qualifications pack code.
Unit Code	Unit code is a unique identifier for an Occupational Standard, which is denoted by an 'N'
Unit Title	Unit title gives a clear overall statement about what the incumbent should be able to do.
Description	Description gives a short summary of the unit content. This would be helpful to anyone searching on a database to verify that this is the appropriate OS they are looking for.
Scope	Scope is a set of statements specifying the range of variables that an individual may have to deal with in carrying out the function which have a critical impact on quality of performance required.
Knowledge and Understanding (KU)	Knowledge and Understanding (KU) are statements which together specify the technical, generic, professional and organisational specific knowledge that an individual needs in order to perform to the required standard.

Organisational Context	Organisational context includes the way the organisation is structured and how it operates, including the extent of operative knowledge managers have of their relevant areas of responsibility.
Technical Knowledge	Technical knowledge is the specific knowledge needed to accomplish specific designated responsibilities.
Core Skills/ Generic Skills (GS)	Core skills or Generic Skills (GS) are a group of skills that are the key to learning and working in today's world. These skills are typically needed in any work environment in today's world. These skills are typically needed in any work environment. In the context of the OS, these include communication related skills that are applicable to most job roles.
Electives	Electives are NOS/set of NOS that are identified by the sector as contributive to specialization in a job role. There may be multiple electives within a QP for each specialized job role. Trainees must select at least one elective for the successful completion of a QP with Electives.
Options	Options are NOS/set of NOS that are identified by the sector as additional skills. There may be multiple options within a QP. It is not mandatory to select any of the options to complete a QP with Options.